

Appendix K: Fire Protection Standards

18-1 General

18-1.1 Scope

This section of the Lewis and Clark Subdivision regulations presents the minimum planning, construction, maintenance elements for subdivisions to provide for the protection of life and property from emergency incidents.

18-1.2 Purpose

All subdivisions shall be planned, designed, constructed, and maintained to minimize the risk of fire and to permit effective and efficient response to and mitigation of emergency incidents in order to protect persons, property, and natural resource areas.

To place structures in such a manner so as to minimize the potential for flame spread and to permit efficient access for fire fighting equipment.

18-2 Definitions

Total Square Feet Of Structure: This is the structure's footprint times the number of floors. This includes all building spaces attached to the structure.

Accessory Building or Structure: Any building or structure used incidentally to another building or structure.

Alternative: A system, condition, arrangement, material, or equipment submitted to the Fire Protection Authority Having Jurisdiction (FPAHJ) as a substitute for a code requirement.

Approved: Acceptable to the Fire Protection Authority Having Jurisdiction.

Aspect: Compass direction toward which a slope faces.

Building: Any structure used or intended for supporting any occupancy.

Combustible: Any material that, in the form in which it is used and under the conditions anticipated will ignite and burn (see Noncombustible).

Defensible Space: A designated area around a home or other structure the size of which is dependent on the vegetation, proximity of tree crowns, slope and distance to adjacent buildings. Within this area all weeds, dry grass, slash, flammable debris and flammable fuel is removed. This managed buffer surrounding buildings and structures is designed to reduce the chances of a fire spreading to or from the building or structures; to protect life and property from wildland fire; to provide a safe working area for fire fighters protecting life and improved property.

Dry Hydrant: An arrangement of pipe permanently connected to a year around water source other than a piped, pressurized water supply system that provides a ready means of water supply for fire-fighting purposes and that utilizes the drafting (suction) capability of fire department pumpers. The point of connection between the water source and the pumper shall be approved by the FPAHJ.

Dwelling: One or multiple living units, each providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation. Multiple living units must be approved through subdivision review and approval.

Evacuation: The temporary movement of people and their possessions from locations threatened by wildland fire or other emergencies that may threaten citizens.

Fire Hydrant: A valved connection on a piped year around pressured water supply system having one or more outlets that is used to supply hose and fire department pumpers with water.

Fire Lane: A means of access or other passageway designated and identified to provide access for emergency apparatus where parking is not allowed.

Fire Protection Authority Having Jurisdiction (FPAHJ): The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

Fire Resistant Landscaping: Vegetation management that removes flammable fuels from around a structure to reduce exposure to radiant heat. The flammable fuels maybe replaced with green lawn; gardens; certain individually spaced, green, ornamental shrubs; individually spaced and pruned trees; decorative rock or stone; or other non-flammable or flame resistant materials.

Fire Resistive or Fire Resistive Construction: Construction to resist the spread of fire, details of which are usually found in the applicable state fire and building codes.

Fuel Break: An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for fire fighting.

Fuel Hazard Rating: A measure of the expected fire behavior and the difficulty of fire control in non-fire-resistive materials.

Fuel Loading: The volume of fuel in a given area generally expressed in tons per acre.

Fuel Modification: Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control.

Fuels: All combustible material within the wildland/urban interface, including vegetation and structures.

Greenbelt: An area with fire-resistive vegetation (planted or native), maintained to cause a reduction in fire intensity, and used for other than fire protection (golf course, cemetery, park, playground, mowed park, orchard, etc.).

Ground Fuels: All combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat, or sawdust that typically support combustion.

Hammerhead T: A roadway that provides a "T" shaped three-point turnaround for emergency equipment that is no narrower than the road that it serves.

Hazard: A fuel complex defined by kind, arrangement, volume, condition, and location that determines the ease of ignition and/or of resistance to fire control.

Ladder Fuels: Fuels that provide vertical continuity allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Life Risk: Events, actions, or situations created by emergency incidents that have the potential to cause serious injury or death to people.

Life Safety: Actions taken to prevent the endangerment of people threatened by emergency incidents or by activities associated with the management.

Listed: Equipment, materials, or services included in a list published by an organization that is UL listed and is concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets identified standards or has been tested and found suitable for a specified purpose.

Mitigation: Action that moderates the severity of a fire hazard or risk.

Noncombustible: A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire.

Public Access Easement: A thoroughfare that has been dedicated for public use.

Rated Roof: A roof constructed with a "roof covering assembly" that is listed as meeting the requirements for Class A, B, or C "roof covering assembly materials."

Roadway: An open way for passage of vehicles giving access to one or more parcels. As defined in the road standards section of these regulations, there are four main classifications in Lewis and Clark County: local roads, minor collectors, major collectors, and arterials.

Setback: Distance between a structure and the closest property boundary or edge of right-of-way.

Shall: Indicates a mandatory requirement.

Should: Indicates a recommendation or that which is advised but not required.

Shoulder: Surface of a road adjacent to the traffic lane.

Slope: Upward or downward incline or slant, usually calculated as a percent of slope [rise or fall per 100 ft (30.45 m) of horizontal distance].

Street or Road Identification Signs: Any sign containing words, numbers, directions, or symbols that provides information to emergency responders.

Structure: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Survivable Space: Characteristics of a structure to survive a wildland fire on its own that are a combination of topographical location of the building site, design, and fuel/vegetation management to limit the ignition zone around structures.

Traffic Lane: That portion of a roadway that provides a single lane of vehicle travel in one direction.

Turnaround: A portion of a roadway, unobstructed by parking, that allows for a safe reversal of direction for emergency equipment (see cul-de-sac and hammerhead T).

Vegetation Management Plan: A vegetation management plan reduces the amount of fuel available for wildland fires, reducing the probability of a rapidly spreading wildland fire. Elements of the plan include removal of slash, snags, other ground fuels, ladder fuels and dead trees, and thinning of live vegetation.

Water Supply: A source of water for fire-fighting activities.

Wildland Fire: An unplanned and uncontrolled fire spreading through vegetative fuels, at times involving structures.

Wildland/Urban Interface: An area where improved property and wildland fuels meet.

18-3 Fire Protection

18-3.1 Fire Protection Plan

An Applicant shall provide with the subdivision application a fire protection plan that states how the Fire Protection Standards of the Lewis and Clark Subdivision Regulations will be addressed.

18-3.2 Adequate Fire Protection

The presence of adequate fire fighting facilities for the site, and guidelines for determining the adequacy of fire protection can be found in Appendix K.

18-4 Water Supplies for Fire Protection

Fire protection options for new subdivisions are grouped into two categories, Class I and Class II. Each of these has a variety of options regarding water supply the applicant may select from to meet the minimum requirements. The determination of whether class I or II requirements apply is based on density, the number of lots created in the final plat, and whether or not the development is set back at least 15 feet from all property lines, as described below. In the event that the property is located in a zoning district that requires a setback of greater than 15 feet, the larger setback shall apply.

DENSITY/SETBACK	CLASS I	CLASS II
5 or more acres per dwelling unit (With or without 15 ft. setback)	20 or more lots	Less than 20 lots
1 to 4.9 acres per dwelling unit		
With 15 ft. setback	20 or more lots	Less than 20 lots
Less than 15 ft. setback	15 or more lots	Less than 15 lots
.5 to .99 acres per dwelling unit		
With 15 ft. setback	20 or more lots	Less than 20 lots
Less than 15ft. setback	5 or more lots	Less than 5 lots
.25 to .49 acres per dwelling unit		
With 15' setback	10 or more lots	Less than 10 lots
Less than 15' setback	5 or more lots	Less than 5 lots
Less than .25 acres per dwelling unit (With or without 15' setback)	5 or more lots	Less than 5 lots

At a minimum, every Class I or Class II subdivision shall be provided with a water supply, either on-site or off-site, for the purpose of fire fighting, meeting the requirements of 18-4.

18-4.1 One- and Two-family Dwellings

A. Class II subdivisions will provide a water supply system of sufficient volume, pressure and water distribution system to fight fire on site according to the following schedule:

1. One- and two family dwellings

- a. 250 gpm for two hours
 - 1) Water shall be supplied by a well and pump with required volume and minimum pressure of 20 PSI. An overhead fill may be required in order to fill tankers. The fill site must be useable year round and the FPAHJ must have legal access in perpetuity.
OR
 - 2) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The

pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and approved by the FPAHJ.

OR

- 3) 30,000-gallon storage with dry hydrant. Dry hydrant applications may be used for ponds, streams, and lakes. The system must be designed to be useable and accessible year round. All pipe must be a minimum of 6 inch diameter and the threads at the outlet must be 6 inch male NST.

B. Class I subdivisions will provide a water supply system of sufficient volume, pressure and water distribution to fight fire on site according to the following schedule:

1. One dwelling per 20 or more acres.

a. 500 gpm for one hour:

- 1) Water shall be supplied by a well and pump with required volume and minimum pressure of 20 PSI. An overhead fill may be required in order to fill tankers. The fill site must be useable year round and the FPAHJ must have legal access in perpetuity.

OR

- 2) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

OR

a. 30,000 gallon storage with dry hydrant:

- 1) Dry hydrant applications may be used for ponds, streams, and lakes. The system must be designed to be useable and

accessible year round. All pipe must be a minimum of 6 inch diameter and the threads at the outlet must be 6 inch male NST.

2. One dwelling per 5 to 19.9 acres

a. 500 GPM for two hours

- 1) Water shall be supplied by a well and pump with required volume and minimum pressure of 20 PSI. The fill site must be useable year round and the FPAHJ must have legal access for perpetuity.

OR

- 2) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

3. One dwelling per 1 to 4.9 acres

a. 750 GPM for two hours

- 1) Water shall be supplied by a well and pump with required volume and minimum pressure of 20 PSI. The fill site must be useable year round and the FPAHJ must have legal access in perpetuity.

OR

- 2) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

4. One dwelling per .5 to .99 acre

a. 1000 GPM for two hours

- 1) Water shall be supplied by a well and pump with required volume and minimum pressure of 20 PSI. An overhead fill may be required in order to fill tankers. The fill site must be useable year round and the FPAHJ must have legal access in perpetuity.

OR

- 2) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

5. One dwelling per .25 to .49 acre

a) 1000 gpm for two hours and

b) Fire hydrant spacing every 1000 feet (fire hydrant spacing shall be measured along a route of legal access)

- 1) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

6. One dwelling per < .25 acre

a) 1500 gpm for two hours and

b) Fire hydrant spacing every 500 feet (fire hydrant spacing shall be measured along a route of legal access)

- 1) Water shall be supplied by a tank/pressurized hydrant combination. The tank may be constructed from plastic, concrete, fiberglass or other materials capable of holding and maintaining the required water supply. The tank must be built and installed so as to last a minimum of 30 years. The pump must be capable of delivering the required gpm at a minimum of 20 psi from an approved fire hydrant. The system shall be inspected and certified by a Professional Engineer, and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

OR

- 2) Water shall be supplied by a community water system. The system shall be capable of delivering the required gpm at a minimum of psi from approved fire hydrants. The system shall be inspected by a Professional Engineer, and a copy of the inspection and certification will be provided to the FPAHJ and County Planning.

18-4.2 Buildings other than One- and Two-family Dwellings.

- a) Water supply and the minimum fire flow requirements shall be in accordance with the provisions of 18-4.1.

18-4.3 Maintenance

An easement for unrestricted use by the fire department, in perpetuity, of the water supply system shall be recorded and noted on the plat.

The subdivider shall establish or join a Rural Improvement District (RID) prior to final plat approval that, at a minimum, ensures continual operation, annual testing and maintenance of the water supply system and fire protection features. The FPAHJ will not be responsible for any maintenance, electricity, or any costs associated with enhancements, upgrades or other measures necessary to assure the system functions to original specifications.

The RID shall include assessments for the annual testing of the water supply system by the FPAHJ, or a subcontractor specified by the FPAHJ. The results of the annual testing shall be provided to the FPAHJ and the benefiting property owners within the RID as soon as available.

18-4.4 Proportionate Reimbursement

If subsequent subdivisions will be served by an existing water supply, the County Commission may include reimbursement of a portion of the original water supply improvement costs as a condition of final approval of any subsequent subdivision. This reimbursement condition shall be in effect for ten (10) years from the date the County Commission directs the original subdivider to construct a water supply. Ongoing maintenance of the original water system shall be provided by an RID.

18-4.5 Reimbursement Methodology

The original subdivider may forward the total costs of improvements for the water supply to the planning department within 60 days of the completion of the improvements. If required, subsequent subdividers shall pay their proportionate reimbursement to Lewis & Clark County. The Lewis & Clark County Treasurer shall then make disbursements within 60 days of receiving reimbursement funds. Funds shall be disbursed to the original subdivider.

18-4.6 Off-Site Water Supply System

The BOCC may consider the utilization of an existing off-site water supply system under the following conditions:

1. The applicant has secured any necessary easements and/or agreements from the affected property owner(s) and/or homeowners association;
2. A rural improvement district (RID) for the maintenance of the off-site water supply system that includes the subdivision is established prior to final plat approval;
3. Use of an existing off-site water supply system does not diminish the fire protection provided to the subdivision it was originally built to serve or it is upgraded and/or expanded to provide volume, pressure, and distribution in accordance with these regulations for both subdivisions;
4. The off-site water supply system is located no longer than one county road mile from an existing or proposed internal access road for the subdivision; and
5. The utilization of the off-site water supply system does not require the FPAHJ to travel on arterial or major collector roads, cross railroad crossings, or travel on roads with grades in excess of 11 percent to deliver water from the off-site water supply system to the subdivision.

When proposing to utilize an existing off-site water supply system, the applicant shall submit with the subdivision application, at the Applicant's expense, current

performance data for the water supply system based on current field measures, certified by a professional engineer licensed in the State of Montana. If available, the applicant shall submit, with the subdivision application, as built specifications and drawings to the FPAHJ and County Community Development and Planning Department.

18-4.7 Fire Protection Authority Having Jurisdiction (FPAHJ) Approval of Water Supplies for Fire Protection

The subdivider shall provide a certification from an engineer, licensed in the State of Montana, stating that any new or improved fire protection water supplies serving the subdivision comply with the requirements of preliminary approval. The subdivider shall also submit a written verification from the Fire Protection Authority Having Jurisdiction (FPAHJ) stating that the FPAHJ has inspected and tested the fire protection water supplies serving the subdivision. The FPAHJ's inspection and testing must occur after the subdivider submits to the FPAHJ a certification from an engineer, licensed in the State of Montana, stating that any new or improved fire protection water supplies serving the subdivision comply with the requirements of preliminary approval.

18-5 Access & Evacuation

Access for emergency responders and evacuation shall be provided for all buildings. Routes shall provide ingress for fire department apparatus used in establishing a defensive perimeter around building(s) and shall be designed and constructed to allow simultaneous egress for the evacuating public. Access routes shall be deemed driveways or roadways.

18-5.1 Roadways

18-5.1.1 Access to all major and subsequent minor subdivisions shall be provided by a minimum of two approach routes, located as remotely from each other as possible to assure more than one escape route for residents and access routes by emergency vehicles. A cul-de-sac meeting the requirements described in Chapter XI.H.15 fulfills this regulation.

18-5.2 Obstructions

Landscaping or other obstructions placed around structures shall be maintained in a manner that does not impair or impede accessibility for fire department operations. Filler valves for buried residential propane tanks shall be located below the ground surface to avoid possible shearing by heavy equipment.

18-5.3 Easements and Rights-of-Way

Where necessary, the applicant shall obtain or provide evidence that an attempt was made to obtain an easement from adjacent property owners for emergency vehicle access.

18-6. Water Supply

The location of a fire-fighting water source and each access to that source shall be identified using the Lewis and Clark County Fire Council Dry Hydrant Sign Standard and shall indicate whether it is a fire hydrant on a non-municipal system, a dry hydrant, or another type of water supply. Access and construction for water supplies shall, at a minimum, follow the Driveway standards listed in Appendix J.

18-7 Wildland/Urban Interface

Special standards are required for subdivisions proposed in wildland/urban interface areas.

18-7.1 Wildland/Urban Interface Areas

The fuel hazard rating of wildland/urban interface areas is determined by using the Fuel Hazard Rating Map for the Tri-County area. Developers should consult the "Guidelines for Administration for the Tri-County Fuel Hazard Mapping" (See Appendix K(A), *Wild Fire Fuel Hazard Identification Guidelines for Administration*) to ensure a complete understanding of the Fuel Hazard Rating criteria. If the area to be developed is not covered by the Fuel Hazard Rating Map, the applicant must hire the services of a qualified fire protection professional to assess the Fuel Hazard Rating for the project area. The County Planning Department shall maintain a list of "qualified fire protection professionals" from which the applicant can choose.

18-7.2 Additional Requirements

High fire hazard areas include heads of draws, excessive slopes, dense forest growth or other hazardous wildfire components. For subdivisions proposed in areas classified as B, C or X wildland fuel hazard as defined in 18-7.1 and the fuels are not modified to a lower hazard rating in accordance with 18-7, the following standards shall apply:

18-7.2.1 Roof Coverings- Refer to *Guideline 205 Roof Construction* (Appendix B of *Fire Protection Guidelines For Wildland Residential Interface Development*).

18-7.3 Accesses and Evacuation

18-7.3.1 Roadside Vegetation- Maintain roadside vegetation to protect roads from radiant heat, so they can be used both as escape routes and fire breaks. A recognized fire or fuels management specialist selected from the list of approved qualified fire protection professionals maintained by the County Planning Department shall be used to determine how much vegetation to clear based on local conditions. At a minimum the following standards shall apply:

- a. Thin trees to 10 feet between crowns.
- b. Remove ladder fuels and prune tree limbs up to 15 feet, or one-third of the live crown of the tree, whichever is less.
- c. Remove dead vegetation, logs, snags, etc. Remove snags to a distance that prevents them from falling into cleared right-of-way or on roads.
- d. In the clear zone and where practical, reduce brush, grass, and other vegetation and maintain it at a maximum of 12 inches high, in perpetuity.

18-7.3.2 Subdivisions shall be designed to allow emergency vehicles access to areas behind structures by:

- a. Providing a perimeter roadway approved by FPAHJ along the entire wildland side of a development;

Or by

- b. Providing a fuel break, designed by a recognized fire or fuels management specialist and approved by the FPAHJ, and accessible to fire apparatus.

18-7.4 Building Density Requirements

Densities in areas of steep slopes and/or dense forest growth shall be reduced through minimum lot standards as follows:

Minimum Lot Size (Acres)

% Slope	Open Grass	Forest & Brush
0-10	1	2
11-20	2	3
21-30	3	4
Over 31	4	Not Permitted. ¹

¹Building sites shall be prohibited on slopes greater than 30 percent and at the apex of "fire chimneys" (topographical features, usually drainage way or swale, which tend to funnel or otherwise concentrate fire toward the top of steep slopes).

18-7.5 Vegetation Management

18-7.5.1 A vegetation management plan shall be prepared in accordance with 18-10.

18-8 Fire Protection Covenants

18-8.1

The following covenants may be included as a requirement of the Fire Protection Plan to mitigate potential threats from fire.

18-8.1.1 Maintenance of Fire Protection Water Supply- (for example: water systems, fire hydrants, draft sites, fill sites, buried tanks or open ponds) - Fire protection water supplies must be maintained to their original performance capability in perpetuity. All lot owners shall waive their right to protest the creation of an RID for the purpose of maintaining water supply for fire protection. A waiver of a right to protest may not be valid for a time period longer than 20 years after the date that the final subdivision plat is filed with the County Clerk and Recorder.

18-8.1.2 Maintenance of Fire Protection Features (for example: defensible spaces, driveway routes, fuel breaks, fuel modification plan, greenbelts, etc.) Fire protection features must be maintained to their original performance capability in perpetuity by the property owners. All lot owners shall waive their right to protest the creation of an RID for the purpose of maintaining all fire protection features. A waiver of a right to protest may not be valid for a time period longer than 20 years after the date that the final subdivision plat is filed with the County Clerk and Recorder.

18-8.1.3 Use of Water Supply System – Lot owners shall be notified that the components of a water supply system used for fire protection shall be exclusively available for the purposes of fire protection.

18-8.1.4 Vegetation Management Plans – Lot owners shall be notified of required vegetation management plans and the required vegetation management plan shall be recorded with the County Clerk and Recorder at the time of final plat filing.

18-9 Mapping

18-9.1 A map of the subdivision shall be provided to the FPAHJ indicating streets, addresses, street names, fire protection features, lot lines, buildable area envelopes, utilities, easements, etc.

18-9.2 The subdivider shall provide location data (latitude and longitude) of all on-site and off-site water supply system features that will serve the subdivision to the Lewis and Clark County Community Development and Planning Department with the application for final plat approval or as fulfillment of a Subdivision Improvements Agreement per Appendix E.

18-10 Vegetation Management

18-10.1 A vegetation management plan shall be prepared by a recognized fire or fuels management specialist selected from a list of “qualified fire protection professionals” maintained by the Community Development and Planning Department. The intent of the vegetation management plan is to reduce fuel loading and hazard rating and provide continuous maintenance of the fuel load:

- To protect life and property.
- To reduce the potential for a fire on improved property from spreading to wildland fuels and from a fire in wildland fuels from spreading to the structures.
- To provide a safe working area for emergency responders.

18-10.2 Vegetation Management Plan- Vegetation management plans shall describe all actions that will be taken to prevent a fire from being carried toward or away from the development. A vegetation management plan shall include at least the following information:

- a. A copy of the site plan for the development.
- b. Methods and timetables for controlling, changing or modifying areas on the property, including roadside vegetation. Elements of the plan shall include removal of slash, snags, vegetation that may grow into overhead electrical lines, other ground fuels, dead trees, and thinning of live trees.
- c. Defensible Space – (Refer to Guideline 201.1 and 201.2, Vegetation Reduction And Clearance – *FIRE PROTECTION GUIDELINES FOR WILDLAND RESIDENTIAL INTERFACE DEVELOPMENT*).
- d. Fuel Breaks & Greenbelts – (Refer to guideline 204, Fuel Breaks and Greenbelts – *FIRE PROTECTION GUIDELINES FOR WILDLAND RESIDENTIAL INTERFACE DEVELOPMENT*).

- e. A plan for continuously maintaining the proposed fuel-reduction, defensible space, fuel breaks & greenbelts measures and responsibility of maintenance defined.

Appendix K(A): WILD FIRE FUEL HAZARD IDENTIFICATION GUIDELINES FOR ADMINISTRATION

Executive Summary

The following briefly summarizes guidelines for administering wildfire fuel hazard rated lands within the wildland/urban interface.

FUEL HAZARD CLASSES.

Group A

These areas represent a low fuel hazard with potential for fast spreading fires when grass is cured. (Early spring before green-up and late summer and fall). These are areas of grass, weeds, and brush less than 2 feet high. The fire hazard can be easily mitigated in these fuels.

These areas are generally not a problem for development from a fire protection standpoint. Humans can usually avoid burning areas with ease and firefighters can work easily and efficiently under normal weather conditions. Heavy damages are still possible when items are within the burning area without adequate fuel treatments, clearances, or protection. This fuel type will accommodate the heaviest and widest range of developments with respect to wildfire hazards.

Group B

These areas represent a medium fuel hazard. They are medium density conifer stands with primarily a grass and brush understory. The conifer overstory tends to reduce the density of the grass and brush. Minimal fuel reduction is needed to reduce this Group to a less severe state.

Inexperienced people are usually afraid and can panic when these areas burn. Property, real and personal, can sustain heavy losses due to the greater burning intensities. Due to the burning characteristics and resultant dangers for "B" rated fuels, it will be advantageous to coordinate and regulate development in these areas. Development can only exist if fuel modifications and treatments are completed prior to completion of the development.

Group C

This Group represents a high fuel hazard with potential for high intensity crown fires. These are dense conifer stands. Fuels can be reduced to a less severe state on slopes less than 30% but usually require some form of commercial harvest.

Experienced firefighters are most cautious in these fuels and are ever fearful of the crown fire potential. Rescue of persons entrapped by hot wildfires in these fuels is nearly impossible. Property, real and personal, can face complete destruction. Injuries can be serious and deaths may easily occur. The burning characteristics and resultant dangers in "C" fuels make it one in which close, coordinated and regulated development is advantageous to all interests, both public and private. At best, development in these areas will only be marginal in safety and then only after modifications and treatments are completed prior to completion of the development itself.

Group X

This Group represents a high to severe fuel hazard with potential for high intensity fire and extreme rates-of-spread. These are dense, flammable vegetation over two feet high including tall sagebrush and conifer reproduction (regeneration). Fuels can be readily reduced to a less severe state on slopes less than 30%.

Although very similar to "C" fuels when subjected to wildfire, the "X" type is delineated separately from "C" fuels because of its higher intensity burning characteristics, rapid rates of spread and its different requirements for mitigation. The dangers of intense, destructive wildfires are greatest in "X" fuels. Property, real and personal, will face heavy damage and possibly complete destruction during wildfires. Injuries can be serious and deaths may easily occur due to entrapment. The burning characteristics and resultant dangers make it one in which close, coordinated and regulated development is imperative to all interests, both public and private. Fuel Hazard X~' lends itself to modification and can usually be readily reduced

Appendix K (B): APPLICATION

The following guidelines apply to all developments in the Urban Wildland Interface (UWI) including residential, commercial, and recreational developments on private, State, and Federal lands. The guidelines should be used in conjunction with local fire authorities to safeguard homes and developments in a specific locale.

201 VEGETATION REDUCTION AND CLEARANCE

Trees, brush and dense undergrowth are the primary fire hazards. This vegetation can ignite readily, burn with intense heat, and promote rapid spread of fire. Vegetation must be managed so as to reduce exposure of structures to flames and radiant heat during a wildfire. The reduction of flammable vegetation and other hazards around buildings provides a "defensible space" for firefighters and residents. As a minimum, developers and landowners should:

1. Create a defensible space by:

- a. Determining the slope of the building site.
- b. Use the vegetation-slope charts (Appendices A-D of *The Montana Fire Protection Guidelines for Wildland Residential Interface - Development*) as a guide. Reduce and remove vegetation around each building according to the slope. Single ornamental trees or shrubs need not be removed as long as all vegetation near them is reduced according to the guideline. Ornamental trees and shrubs should not touch any buildings.
- c. When planting select trees, shrubs, and vegetation that limit or retard fire spread as suggested below:
 - i. Perennial: Choose hardy perennial flowers that are adapted to our climate. These green, leafy, succulent plants are difficult to burn. Watering and regular weeding improves fire resistance.
 - ii. Shrubs: Avoid evergreen shrubs such as dwarf conifers or junipers tend to ignite easily; avoid them unless well spaced.
 - iii. Trees: Deciduous trees can be clumped, scattered, or planted in greenbelts or windbreak patterns. Evergreen trees tend to ignite easily and should be spaced in accordance with the landscaping guidelines. (Appendices A-D of *The Montana Fire Protection Guidelines for Wildland Residential Interface - Development*).

- d. Montana Fire Hazard Reduction Law requires that any person who creates a slash fire hazard as a result of logging or thinning must reduce or manage the hazard. Contact the Montana Department of State Lands for legal requirements and assistance in reducing any identified hazards.

2. Create a survivable space by:

- a. Determining the location of structures to limit the ignition zone around the structures.
- b. Minimizing firebrand receptive beds, such as debris, pine needles, firewood stacks, etc., and performing regular maintenance.

Nothing provides a guarantee that a structure will survive a wildland fire. Appropriate and applicable survivable space provisions provide the best chance for a structure to resist loss and/or damage during a wildland fire, on its own, without direct suppression intervention by firefighters.

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